

THE LARVA OF *BAETIS DARDANUS* McDUNNOUGH (EPHEMEROPTERA: BAETIDAE)¹

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ABSTRACT: Larvae of *Baetis dardanus* McDunnough are described from specimens collected in Alberta, Canada. This species is most closely related to *B. epphipiatus* Traver. Characters used to separate these two species are given.

Baetis dardanus was originally described by McDunnough (1923) from male imagoes collected in Manitoba. The name was subsequently synonymized with *B. propinquus* (Walsh) by Burks (1953). Morihara and McCafferty (1979a) examined the lectotype (McDunnough, 1925) of *B. propinquus* and found the forceps to be of a type previously considered characteristic of males of *B. spinosus* McDunnough and distinctly different from those described for *B. dardanus*. Thus, they placed *B. spinosus* as a junior synonym of *B. propinquus* and resurrected *B. dardanus* as a valid species. It is therefore apparent that the specific name *B. propinquus* (Walsh) has been largely misapplied, and that many of the records of this species are probably applicable to *B. dardanus*.

Baetis dardanus appears to be widely distributed across central and western North American and has been reported from the following localities: Manitoba (McDunnough, 1923), Utah and Idaho (Edmunds, 1952), and Illinois (as *B. elachistus* and *B. propinquus*; Burks, 1953).

The larva of *B. dardanus* has been described by Edmunds (1952) but many of the character states now used for accurate species determination had not been developed at that time. Bergman and Hilsenhoff (1978) redescribed the larva of *B. dardanus* (as *B. propinquus*) but Morihara and McCafferty (1979a) declared that their description was of a species subsequently named *B. longipalpus* Morihara and McCafferty. When Morihara and McCafferty (1979a) reviewed the systematics of the *B. propinquus* group, they had not seen larvae of *B. dardanus* and could not accurately place this species in their phylogeny of the group. The larvae of the other species in the *B. propinquus* group are described and keyed in Morihara and McCafferty (1979b).

The initial association of larvae and male imagoes of *B. dardanus* was made from reared material and field collections obtained over 3 years from the Sand River. The following redescription of the larva of *B. dardanus* incorporates the variability existing in five populations occurring in different parts of Alberta. Most of the terms and abbreviations used in this

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description are defined by Morihara and McCafferty (1979b).

Baetis dardanus McDunnough, 1923

Mature larva:

Body length. - 6-8mm excluding caudal filaments.

Head. — Scape of antenna with scattered fine setae, scale bases, scales, and distinct distal lobe externally. Pedicel of antenna with scattered fine setae, scale bases, scales, and with tiny spinules apically. Labrum (Figure 1) with branched setae 1+6-9 submarginally on disc. Right mandible (Figure 2) with 3(1)+4 denticles, a row of fine setae along base of incisors, and with margin between incisor and molar areas smoothly sinuate, roughened only by minute tubercles. Left mandible (Figure 3) with 3(1)+3 denticles and slight excavation along base of incisor row posteriorly. Maxillary palpus extended beyond galea-lacinia and with inner apical excavation. Labial palpus (Figure 4) with internal median lobe of second segment greatly enlarged, almost as large as third segment and with 4-6 dorsal setae. Paraglossa (Figure 5) large, with 9-11 pectinate setae in innermost row. Glossa (Figure 5) with ventral setae arranged in irregular row in apical half.

Thorax. — Color pattern varied, mesonotum and pronotum (Figure 8) with narrow pale middorsal stripe. mesonotum with irregularly shaped pale areas anterior to bases of wing buds. Femur with long sharp setae dorsally and short ones ventrally; with or without dark mark ventro-medially on anterior side. Tibia and tarsus with long sharp setae ventrally and short setae dorsally. Tarsal claws with 12-16 denticles.

Abdomen. — Color pattern varied: two principal types of dorsal patterns, either terga 1-6 and 8-9 dark and tergum 7 with pale median area (Figure 8), or terga 1-9 dark with narrow pale middorsal stripe; most specimens with narrow pale areas along lateral margins and often along anterior and posterior margins of most terga; tergum 10 pale, darkened antero-medially or not; intersegmental membranes pale; at least the posterior sterna darkened medially, all darkened to some extent in most mature specimens. Tergal surfaces with scale bases, scales, and fine setae. Posterior margins of terga with short sharp teeth. Paraprocts with scale bases, scales, fine setae, and approximately 25 well developed sharp spines. Gill margins serrate with long fine setae. Caudal filaments of most specimens pale with broad submedian dark stripe, or wholly dark except for pale tips.

Material examined. — Specimens were examined from five locations in Alberta, Canada:

Sand River, 54°23'N 111°2'W; 12 larvae in alcohol, 7 on slides; 16 ♂ imagoes and 1 ♂ subimago all in alcohol.

Chinchaga River, 58°30'N 118°20'W; 7 larvae in alcohol, 1 on slide.

Vicinity of Fincastle Lake, 49°49'N 112°2'W; (R.G. Burland and D.J. Pledger collectors) 11 larvae in alcohol, 3 on slides.

Milk River, 49°6'N 11°42'W; 2 larvae in alcohol, 1 on slide.

Seven Persons Creek, 50°2'N 110°37'W; 5 larvae in alcohol, 2 on slides.

Specimens are deposited in the Canadian National Collection Ottawa, Ontario and the author's private collection.

Discussion

Baetis dardanus larvae can be separated from all known *Baetis* larvae, except those of *B. ephippiatus* Traver, by the following combination of character states: scape of antenna with distinct outer distal lobe,³ labial palpus with medial projection of second segment as large as third segment, maxillary palpus with subapical excavation, and labrum with branched

³Morihara and McCafferty (1979b) erroneously state (p. 146) that this structure occurs on the pedicel.

submarginal setae. Branched submarginal setae on the labrum is a derived character state common to both *B. dardanus* and *B. epphiatus* and indicates a close relationship between these two species. In the phylogeny of the *B. propinquus* group proposed by Morihara and McCafferty (1979a), *B. dardanus* and *B. epphiatus* should probably be considered sibling species (sensu Ross, 1974).

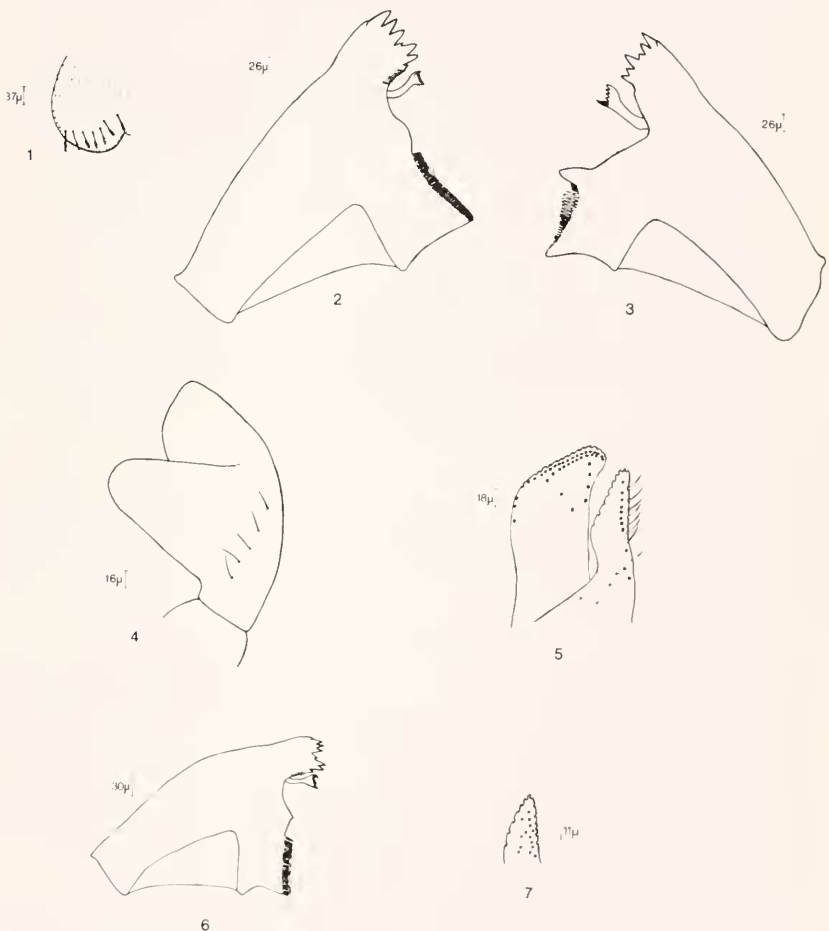


Fig. 1-5. mouthparts of *Baetis dardanus*: 1. Labrum, showing submarginal setae (others not illustrated). 2. Right mandible, posterior view. 3. Left mandible, posterior view. 4. Labial palpus. 5. Glossa and paraglossa.

Fig. 6-7. mouthparts of *B. epphiatus*: 6. Right mandible, posterior view. 7. Glossa.

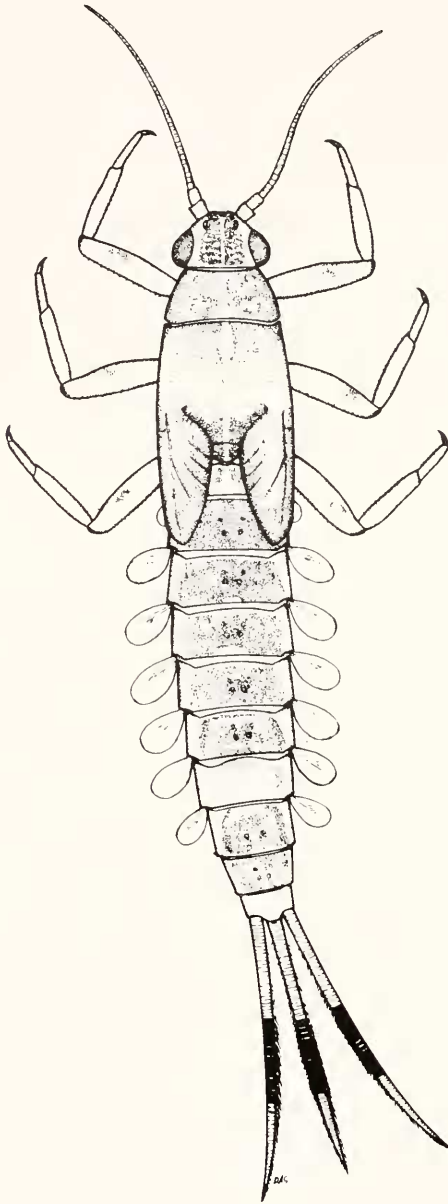


Fig. 8. Dorsal view of *B. dardanus*.

Male imagoes of *B. dardanus* and *B. epphiatus* can be distinguished by the structure of the posterior-median projection between the forcep bases (Moriyama and McCafferty, 1979a). Separation of larvae of these two species requires dissection and examination of the mouthparts. Larvae of *B. dardanus* key out to *B. epphiatus* in Moriyama and McCafferty (1979b). I examined a series of *B. epphiatus* from Mississippi and have prepared the following couplet to distinguish between larvae of these two species.

- Right mandible with margin between incisor and molar areas smoothly sinuate, at most roughened by small sharpened tubercles (Figure 2); ventral setae of glossa in one irregular row in anterior half (Figure 5)
 *B. dardanus* McDunnough
- Right mandible with margin between incisor and molar areas interrupted by a prominent toothlike tubercle (Figure 6); ventral setae of glossa scattered or arranged in two or more irregular rows (Figure 7)
 *B. epphiatus* Traver

This description in accompaniment with Moriyama and McCafferty (1979b) should allow easy separation of the mature larvae of the North American species in the *B. propinquus* group.

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